

# The ICPC Balloon Utility



## An ICPC Tool

The ICPC Balloon Utility (BU) is a tool for keeping track of balloons earned by contest teams for successful run submissions. It receives submission information from one of several input sources, displays information about each submission (such as the problem, team, run ID, school, submission time, etc.) and optionally automatically prints "balloon notification" messages to assist runners in delivering balloons. It also provides runners with an interactive mechanism for tracking delivered balloons, and is even capable of printing maps showing runners where to go find the appropriate balloon and where on the contest floor the receiving team is located (although instructions for configuring it to do that are beyond the scope of this introductory guide).

The following shows a screen shot of the Balloon Utility main screen, after it has been loaded with run submission information from a Contest Control System:

Print

Contest Information

Name: ICPC World Finals 2015 Start time: 3:00:00 AM on May 20, 2015

Length: 5h Contest time: contest over

Connect...

Balloons

Filter by group: All...

#	Run	Problem	Team	University	Time	Firsts	Printed	Delivered
104	132	A - Burgundy	1	Al Akhawayn University	19	T	Y	Y
70	95	A - Burgundy	2	Amrita School of Engineering, Kollam	14	T	Y	Y
586	987	D - Black	2	Amrita School of Engineering, Kollam	238		Y	
183	255	F - White	16	Arab Academy for Science and Technolo...	64		Y	
92	119	A - Burgundy	16	Arab Academy for Science and Technolo...	16	T		
57	82	A - Burgundy	3	Beihang University	13	T		
224	322	D - Black	3	Beihang University	83			
257	374	F - White	3	Beihang University	94			

Print Preview...

Print

Toggle Delivery

☒ Automatically print new balloons 1 of 599 balloons Print Selected Summary Print Full Summary

## Using the Balloon Utility

### Installation

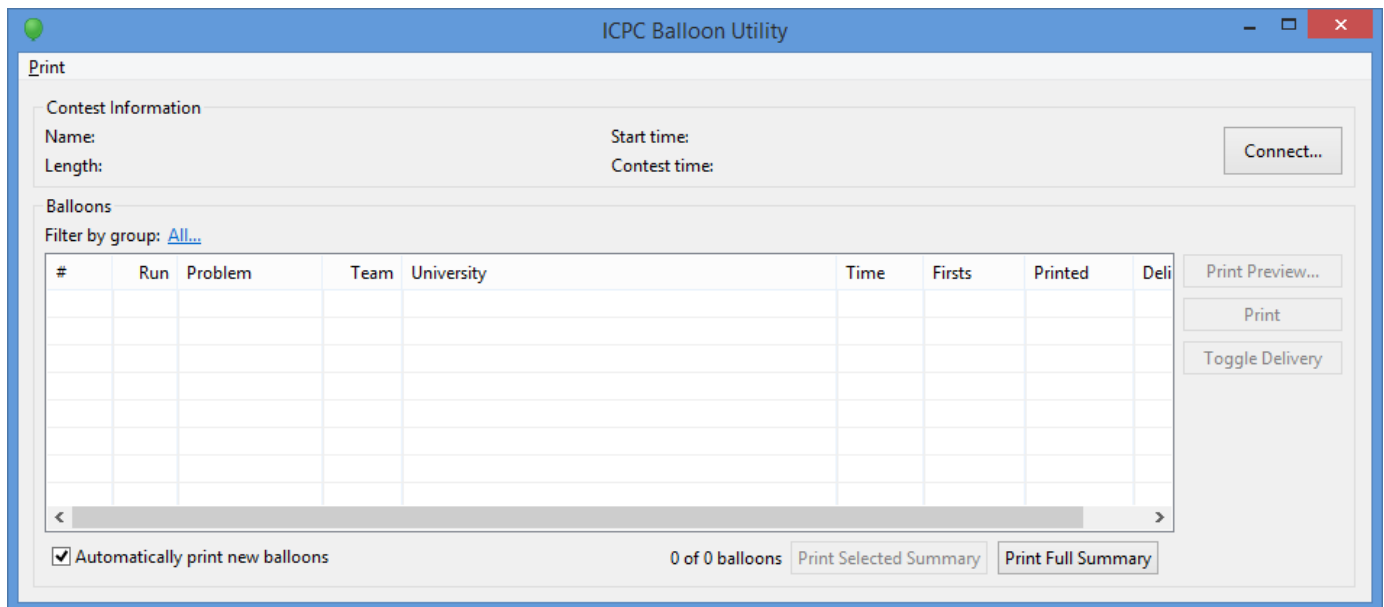
To install the Balloon Utility, download its distribution package from <https://icpc.baylor.edu/icpctools/> and unzip it to any convenient location. The BU is a Java program. The distribution is a self-contained package which contains all the Java libraries and other components necessary to run the Balloon Utility. (Note that Java, Version 1.8 or higher, must also be installed on the machine.)

## Execution

The BU distribution includes a set of scripts which can be used to launch the program. Each of these scripts has a name like *balloon.ext*, where "ext" is "bat" for MS-Windows platforms or ".sh" for Unix-like platforms (including Linux and MacOSX). To start the BU, open a terminal window (command shell), change to the folder where you unzipped the distribution, and type the name of the appropriate script. The scripts do not require any parameters, although adding "--help" will generate a mildly-useful message, and "--clean" will remove any saved balloon data. For more advanced use, you can enter a Contest API URL, user, and password to connect directly to a Contest API server upon startup.

## Input Data Sources

When the BU starts it displays a screen similar to the following:



The screenshot shows the "ICPC Balloon Utility" window. It has a "Print" menu at the top left. The main area is divided into two sections: "Contest Information" and "Balloons".

**Contest Information:** This section contains fields for "Name:", "Length:", "Start time:", and "Contest time:". There is a "Connect..." button to the right of these fields.

**Balloons:** This section has a "Filter by group: All..." link. Below it is a table with the following columns: #, Run, Problem, Team, University, Time, Firsts, Printed, and Delivered. The table is currently empty. To the right of the table are three buttons: "Print Preview...", "Print", and "Toggle Delivery".

At the bottom of the window, there is a checkbox labeled "Automatically print new balloons" which is checked. To its right, it says "0 of 0 balloons". Further right are two buttons: "Print Selected Summary" and "Print Full Summary".

(If existing data was loaded it will be displayed in the screen; otherwise the screen will be unpopulated as shown above.)

In order to use the BU once it is started, it must be connected to the *event feed* output of a *Contest Control System (CCS)*. The Balloon Utility will work with any event feed which is compliant with the *CLI CCS Specification* defined at <https://clics.ecs.baylor.edu/>. CCS's known to produce compliant event feeds include *PC-Squared* and *Kattis*; other Contest Control Systems may also produce compatible event feeds and hence work with the Balloon Utility.

The BU is capable of operating with contest data obtained from one of three different sources: a Contest API source (e.g. CCS or CDS), an *event feed file*, or a *socket connection* directly to an active CCS.

Pressing the "Connect" button (above) will produce the following dialog, used to select the event feed input source for the BU.

ICPC Tools Balloon Utility Connection

How do you want to connect to a contest?

☒ Connect to CDS over HTTPS

URL:

User:

Password:

☐ Connect to CCS via socket

Host:

Port:

☐ Read local event feed

File:

The BU can be connected to an event feed file using the bottom selection in the Connect dialog. An event feed file is created off-line (that is, by steps external to the Balloon Utility) by connecting to port 4713 on a machine running a compatible CCS and saving the resulting output to a file (see [https://clics.ecs.baylor.edu/index.php/Event\\_Feed](https://clics.ecs.baylor.edu/index.php/Event_Feed) for details on the structure of an event feed).

Connecting the BU directly to a running (compatible) CCS is done by entering the Host IP address and port number in the middle entry of the Connect dialog. Note that the default event feed port for ICPC-compatible CCS's is 4713.

Alternatively, the BU can obtain its event feed data from a Contest Data Server (CDS). A CDS provides URL access points for obtaining event feed and other contest data; connecting the BU to a CDS causes it to pull the necessary information dynamically from the CDS. (Note: the CDS must have been configured to connect to a compatible CCS in order for it to supply event feed data to the BU.)

The main reason for using a CDS instead of a simple event feed file or live event feed connection to provide BU input is that a CDS can also provide other information to the BU. For example, if the CDS has been configured with problem names and balloon colors, the BU knows how to pull these from the CDS as well and will use them in the output display. The sample image presented at the start of this document shows the use of such data; these came from connecting the BU to a CDS.

## Operating the Balloon Utility

Each time a successful-run notification arrives in the event feed the BU will display the run information in its grid. If the run represents special conditions, such as being the first solution for a Team (T), Problem (P), Region or Group (R), or in the entire Contest (C), corresponding flags are displayed in the "Firsts" column. The display grid can be sorted on any column by clicking in the

corresponding column header.

One of the most common uses of the BU is for printing "Balloon Notification" messages for runners delivering balloons to teams. Balloon Notification printouts contain information identifying the team (by name and number), problem (by letter), the run submission that earned the balloon (by run ID and submission time) and the color of the balloon which should be delivered.

Balloon Notifications may also contain additional information such as how many other balloons the team has and any special award categories associated with the new balloon (such as an indication that it is the team's *first* balloon or that the balloon represents the first solution (by any team) of the specified problem. Balloon Notifications can also be configured to print a map showing where the team is located on the contest floor, although the mechanism for configuring this map is not documented at this time.

A sample Balloon Notification is shown below:

Team

62


A - Burgundy

Run 20

Time 5

Balloon 1

Team has no existing balloons



Peking University

A

B

C

D

E

F

G

H

I

J

K

L

M

Burgundy

Pink

Light green

Black

Purple

White

Red

Yellow

Blue

Silver

Orange

Green

Gold

First balloon in contest!


Deliver additional gold foil balloon with dignitaries

First solution to problem A!

Deliver burgundy foil balloon

First balloon for this team

Escort photographers to team



0 0 0 0 0 1 0 0 0 2 0 7

M

L

K

J

I

H

G

F

E

D

C

B

A

128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113
61	64	94	104	101	102	105	106	108	109	107	103	109	111	111	111
98	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
66	64	64	64	64	64	71	72	74	74	74	74	74	74	74	74
104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89
34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Delivered \_\_\_\_\_

ICPC World Finals 2015

Powered by



Printed 4/20/16 7:22 PM

To select the printer to be used for printing Balloon Notifications, pull down the "Print" menu in the upper left corner of the main screen and select "Configure Printer"; this will display a list of all printers known to the underlying system and any of these can be selected for use by the BU.

The selected printer can be changed at any time (again, using the Print menu), and the same menu also allows for sending a "Test Message" to the printer to be sure it is working.

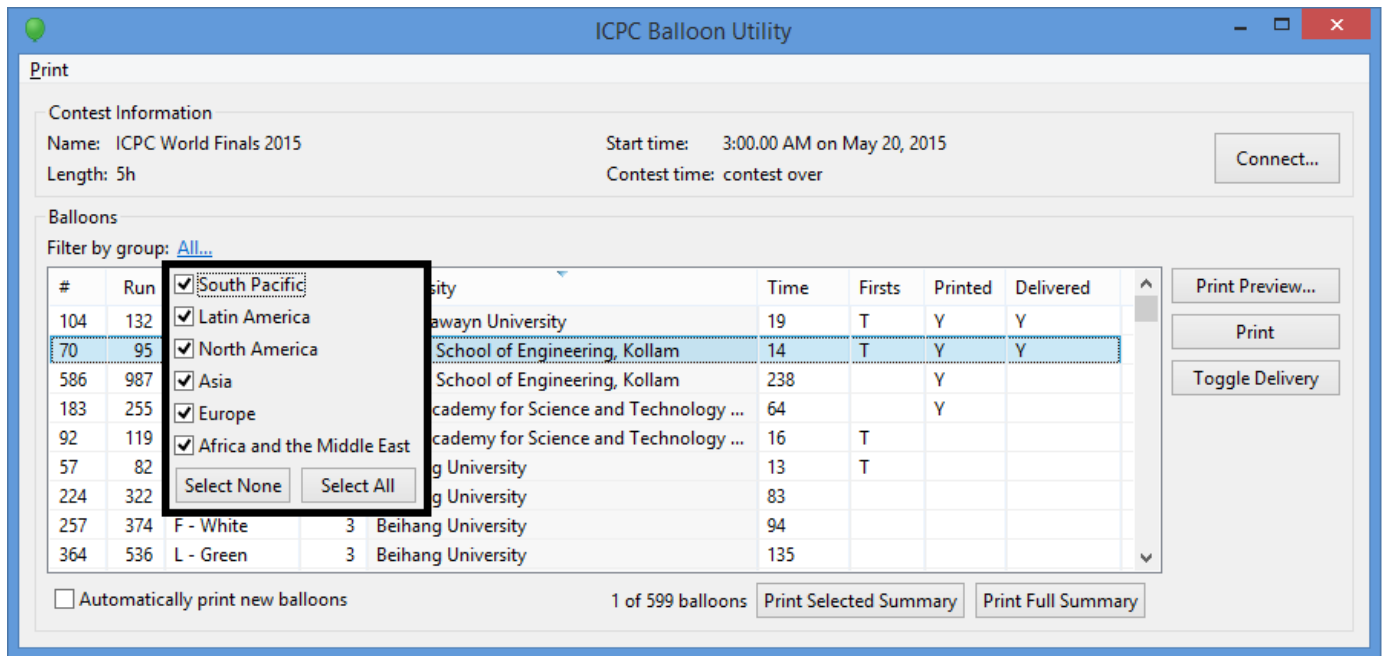
The *Automatically print new balloons* checkbox at the bottom of the main screen can be used to enable or disable automatic printing; if enabled, then whenever a new successful-run notification is received in the event feed the BU will automatically print a new Balloon Notification message to the currently-configured printer.

Selecting one or more rows in the grid (by clicking on them) and then pressing *Print Preview* will print an on-screen version of the Balloon Notification(s) for the selected row(s). Selecting one or more rows and pressing *Print* will send Balloon Notification(s) for the selected rows to the currently configured printer (even if the notifications have previously been printed). Whenever a notification has been printed (including as a result of "automatic printing"), the BU places a "Y" indication in the "Printed" column.

The *Print Summary* buttons allow you to print a complete list of balloons for verification, either a list for rows currently selected in the grid or a complete summary of all balloon notifications for the contest up to the moment. This can be used for example to verify that the balloons which should have been sent to a given team are actually present on the contest floor (by sorting on the Team column and then selecting all runs for that team followed by pressing *Print Selected Summary*), or to check that all of the balloons on the contest floor match what they should be.

The "Delivered" column is used to track when balloons have actually been delivered to teams. Each time a runner delivers a balloon, they should select the corresponding row in the grid and click the *Toggle Delivery* button. This will insert a "Y" in the "Delivered" column, providing an easy way to keep track of delivered notifications. The "Y" notification can be removed if desired by selecting the row and clicking "Toggle Delivery" again. Note also that Balloon Notification printouts have a "Delivered By" signature space near the bottom to allow balloon runners to record that they delivered the corresponding balloon.

The *Filter by group* label (just above the main screen grid, on the left side) can be used to restrict the balloons which are processed by the BU. Clicking on the text next to the label (it shows as "All..." in the following screenshot) produces a drop-down list of the currently-defined "groups" (also called "regions") defined in the contest, similar to the following:



Disabling one or more groups (by unchecking the corresponding checkbox) suppresses the Balloon Utility's processing of Balloon Notifications for the disabled group(s). This allows the balloon handling crew at contests taking place simultaneously at multiple sites to avoid having to deal with Balloon Notifications for teams which are not at their site.

Note that the definition of the groups in a contest comes from data in the event feed read by the BU; groups cannot be directly defined within the Balloon Utility itself.